What is claimed is:

1. A method of determining the position of an object relative to a reference frame from captured images of the object based on triangulation, the captured images being taken by at least two cameras having overlapping fields of view within said reference frame, at least one of said cameras having an offset angle causing an extremity of the field of view thereof to extend beyond a boundary of said reference frame, said method comprising the steps of:

capturing an image of the object using each said at least two cameras at at least one location within said reference frame;

for each location:

determining the position of the object within each image and for each image placing the determined position into a coordinate system corresponding to that of said reference frame; and

processing the determined positions to determine at least one of the position of the object at each location and the offset angle of said at least one camera.

2. The method of claim 1 wherein the determined position of the object within each image is represented by an angle ϕ, said angle being equal to the angle formed between the extremity of the field of view extending beyond the reference frame boundary and a line extending from the camera that intersects the object within the image.

3. The method of claim 2 wherein during said processing each said angle is converted into a rectangular (x_i,y_i) position within the reference frame coordinate system.

4. The method of claim 3 wherein captured images are acquired by cameras at the corners of a rectangular reference frame, each of said cameras having a field of view offset with respect to said reference frame, during said processing each said angle ϕ is converted to an angle ω, said angle ω being represented by:

$$\omega = \alpha - \delta$$

where:

δ is the camera offset; and

α is equal to the angle ϕ with the camera offset removed and references to the y-axis of the reference frame coordinate system and wherein each said angle ω is fitted to the equation:

$$\omega_{cam} = \arctan\left[\frac{x_{cam}-x_i}{y_{cam}-y_i}\right]+\delta_{cam}$$

where:

x_{cam} and y_{cam} are the rectangular coordinates of the camera; and

x_i and y_i are the rectangular coordinates of the object, thereby to yield the rectangular position (x_i, y_i) and the camera offset.

5. The method of claim 4 wherein the fitting is performed using a linearization technique.

6. The method of claim 5 wherein said linearization technique is the Moore-Penrose pseudo-inverse method.

7. A method of determining the position of an object relative to a reference frame from captured images of the object based on triangulation, the captured images being taken by at least two cameras having overlapping fields of view within the reference frame, an extremity of the field of view of each said at least two cameras encompassing a boundary of said reference frame, at least one of said cameras being offset causing the extremity of the field of view thereof to extend beyond said boundary, said method comprising the steps of:

determining the position of the object within each image, the position of the object within each image being represented by an angle, said angle being equal to the angle formed between the extremity of the field of view encompassing the boundary of said reference frame and a line extending from the camera that intersects the object within the image;

determining the offset angle of said at least one camera;

subtracting the offset angle from the angle representing the position of the object within the image taken by said at least one camera to calibrate the angle;

using the calibrated angles to calculate the position of the object with respect to the reference frame using triangulation.

8. The method of claim 7 wherein each said at least two cameras is offset, the offset angle for each said at least two cameras being determined and used to calibrate the angles.

9. In a touch system including at least two cameras having overlapping fields of view and a processor to process image data of said at least two cameras, where the position of an object that is within the overlapping fields of view relative to a reference frame is determined by triangulating object position data captured in an image acquired by each camera, a method of calibrating the touch system comprising the steps of:

determining the offset angle of each camera relative to the reference frame;

using the offset angle to calibrate the object position data; and

using the calibrated object position data during triangulation to determine the position of said object relative to said reference frame.

10. In a touch system including a reference frame, and at least two cameras having fields of view that overlap within said reference frame, wherein the position of an object relative to the reference frame is determined from captured images of the object based on triangulation, and wherein the fields of view of said at least two cameras are rotated with respect to the coordinate system of said reference frame to define offset angles, a method of calibrating said touch system comprising the steps of:

capturing an image of the object using each said at least two cameras at at least one location within said reference frame; and

for each location:

determining the position of the object within each image, the position of the object within each image being represented by an angle ϕ, said angle being equal to the angle formed between an extremity of the field of view extending

beyond the reference frame and a line extending from the camera that intersects the object within the image; and

mathematically calculating the offset angles of said at least two cameras based on the angle determined for each image and the position of said at least two cameras relative to the coordinate system assigned to said reference frame.

11. The method of claim 10 wherein the offset angle of each camera is calculated using a least squares method.

12. A touch system comprising:

a generally rectangular reference frame surrounding a touch surface, one corner of the reference frame defining the origin of a coordinate system assigned to said touch surface;

a camera adjacent each corner of the reference frame, each camera being aimed towards said touch surface and capturing images of said touch surface within the field of view thereof, fields of view of said cameras overlapping within said reference frame, the fields of view of said cameras being offset with respect to said reference frame; and

a processor processing the captured images and generating object position data when an object appears in images, said processor determining the position of said object relative to said origin in rectangular coordinates using said object position data based on triangulation, wherein said processor further executes a calibration routine to determine offset angles of said cameras, said offset angles being used by said processor to adjust said object position data prior to said position determination.

13. A computer readable media including a computer program thereon for determining the offset angles of cameras at different positions along a reference rectangular coordinate system based on object position data generated by said cameras, the object position data generated by each camera representing the position of an object within the field of view of said each camera at least one location within the fields of view of said cameras, said computer program including:

computer program code for relating the object position data generated by each camera to said rectangular coordinate system; and

computer program code for mathematically calculating the offset angle of each camera based on the related object position data and the position of said cameras relative to said coordinate system.